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(54) Title: WORDLINE CONTACT FORMATION FOR NAND DEVICE

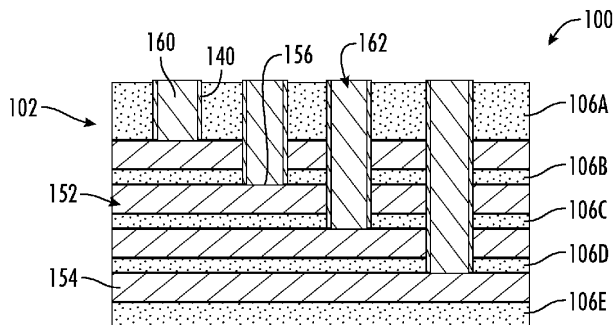


FIG. 11

(57) Abstract: Disclosed are approaches for direct wordline contact formation for 3-D NAND devices. One method may include providing a film stack including a plurality of alternating first layers and second layers, and forming a plurality of contact openings in the film stack, wherein each contact opening is formed to a different etch depth relative to an upper surface of the film stack. The method may further include depositing a liner over the film stack including within each of the contact openings, removing the first layers to form a plurality of wordline openings in the film stack, and forming a plurality of wordlines by depositing a first conductive material within the wordline openings. The method may further include removing the liner from a bottom of each contact opening, and depositing a second conductive material within the contact openings to form a plurality of wordline contacts.

[Continued on next page]

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